

Ethnicity and intonational variation in Singapore English child-directed speech

Adam J. Chong¹, Jasper H. Sim² & Brechtje Post³

¹Queen Mary University of London, ²National Institute of Education/Nanyang Technological University, ³University of Cambridge

a.chong@qmul.ac.uk, jasper.sim@nie.edu.sg, bmbp2@cam.ac.uk

Singapore English (SgE) is a contact variety of English [1] situated in a complex multilingual setting. SgE intonational structure has been argued to consist of prosodic units that typically consist of a single content word and any preceding function words (Accentual Phrases: AP), with a L(ow) tone at the left edge and a H(igh) tone at the right [2]. Previous work on SgE intonation has largely concentrated on productions of ethnically Chinese speakers [3], with the intonation of non-Chinese speakers (e.g., Malay and Indian) still under-examined. Further, most work on ethnicity-related differences, and in fact most sociolinguistic variation, in SgE has largely focussed on segmental features [4,5,6]. Recent work by [7], however, found some evidence of ethnicity-related intonational differences in the speech of SgE-acquiring young children. Specifically, they found that while the global shape of f₀ contours in SgE-children were similar, the relative scaling of f₀ rises and falls across the utterance differed, with Malay children showing shallower rises than Chinese children, regardless of language dominance. [7] raised the possibility that these scaling differences could be at least partly explained by the influence of Malay intonational phonology [8]. These findings in children's speech raise the question of whether these differences are derived from caregiver input.

This exploratory study addresses the question to what extent apparently ethnicity-related variation in children's SgE intonation patterns can potentially be accounted for by their input. We examine intonational variation within the child-directed speech register of SgE, analysing the speech of 9 mothers from the same caregiver/child corpus in [7]: 3 English-dominant English-Chinese bilinguals (EC), 3 English-dominant English-Malay bilinguals (EM), and 3 Malay-dominant English-Malay bilinguals (MM). The dataset consisted of semi-spontaneous SVO declarative sentences (e.g. '*Mary is eating an orange*') with stress-initial subjects and verbs that were elicited through an information gap activity between mother and child. We focus here on intonational patterns in utterance-initial and medial APs (i.e. subject and verb, including auxiliary) where tonal melodies are not affected by utterance-final boundary tones. In total, 280 sentences were analysed across 9 speakers. Time-normalized f₀ measures were extracted over each syllable (10 points/syllable) using a custom Praat [9] script.

First, we observed that while Chinese mothers showed fairly uniform rises over the subject, Malay mothers, especially MM, sometimes showed late peaks where the H tone of the first AP was realized on the following auxiliary verb instead of the final syllable of the subject (Fig. 1). This is a pattern not previously observed in Chinese SgE adults [3] nor in children's productions [7]. Next, we examined the scaling of the LH rises (Fig. 2) over the first (subject) and second AP (auxiliary and verb), focusing only on cases where the rises were contained within a prototypical AP as postulated by [2] (excluding cases with late peaks). LH (rise) ratios were calculated by taking the semitone transformation of the ratio between the maximum and minimum F₀ in each domain. The effects of ethnicity/language (EC vs. EM vs. MM), AP duration and syllable count, on rise ratios were tested using linear mixed-effects models. In both subject and verb APs, only duration showed a significant effect on rise ratios, with larger rises when with longer APs, echoing findings by [10]. Mothers' productions did not differ significantly based on ethnicity/language on these measures, despite numerical differences (Fig. 2).

Overall, our results firstly reveal a possible difference in tonal alignment and possibly prosodic parsing between Chinese and Malay mothers, with Malay mothers sometimes aligning the AP-final H tone of the first AP on a following auxiliary verb (vs. subject noun). Secondly, our analysis of the scaling of rises in initial and medial APs failed to reveal any effect of ethnicity/language dominance, contrary to [7]'s finding with children in the same corpus. It is possible any differences were masked due to the small sample size in the current analysis. Nevertheless, this finding points to the fact that any ethnicity-related differences in the children's speech are not likely just the result of in-task mimicking of caregiver input. Future work will examine other measures (e.g. tonal alignment) and adult-directed speech to examine whether children's patterns reflect speech community-wide norms.

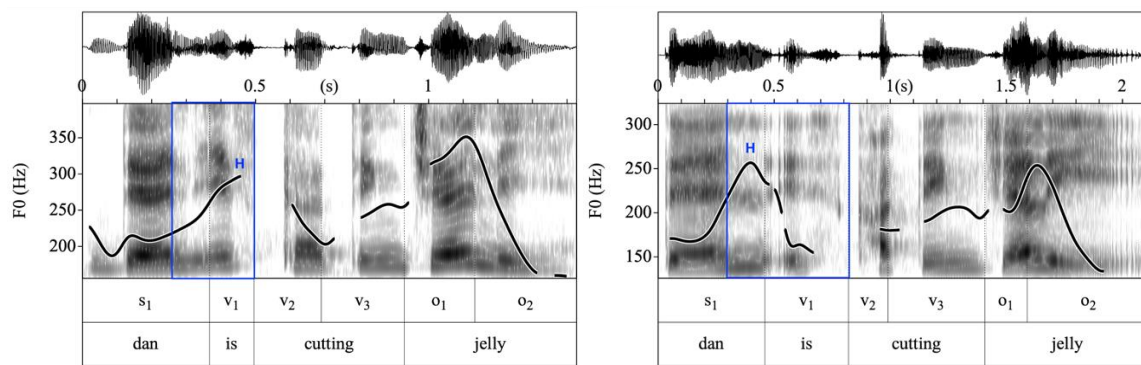


Figure 1. Pitch tracks and spectrograms of (L) a Malay speaker with a late peak - H tone - on the auxiliary and (R) a Chinese speaker with a peak at the end of the subject.

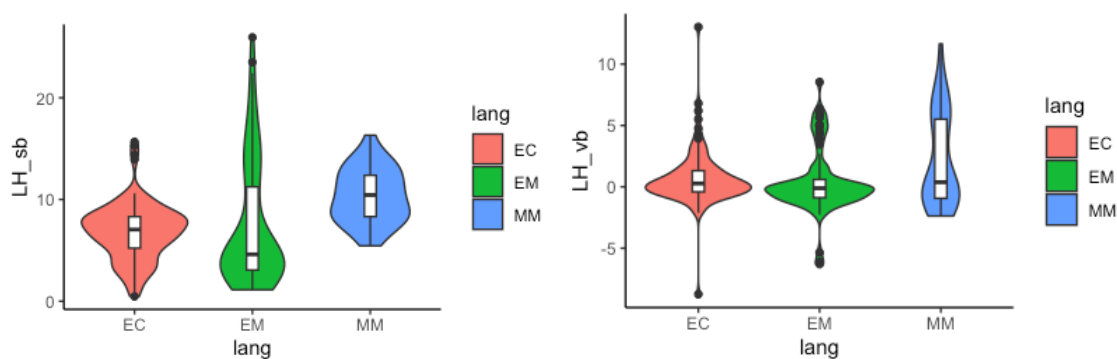


Figure 2. LH (rise) ratios (in semitones) on the (L) subject and (R) auxiliary and verb. EC = English-dominant Chinese, EM = English-dominant Malay and MM = Malay-dominant Malay speakers.

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